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# CONSUMER PERCEPTIONS OF NUTRITIONAL LABELLING

by

(C) ROSEMARY HELEN DAVINA MCCORMICK

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The undersigned certify that they have read and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled "Consumer Perceptions of Nutritional Labelling," submitted by Rosemary H. D. McCormick in partial fulfilment of the requirements for the degree of Master of Science.

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# ABSTRACT

This thesis is a study of consumer perceptions of the nutritional labelling which appears on food products sold on the Edmonton retail market. The study used a questionnaire which was personally administered to consumers shopping in selected local supermarkets.

Results of the study indicated that consumers are interested in nutritional information. Cooperation for the questionnaire was easily obtained, and awareness of label information in some instances was high. However, the level of perception appeared to be influenced by the personalization of the message and the promotional effort which accompanied it.

The implications of this study can be directed both at the food industry and the makers of consumer protection policy. While the provision of nutritional information on labels is a current legislative issue, label information alone does not reach the consumer effectively. Communication with the consumer requires the food industry and the government to cooperate to integrate labelling programs with regular marketing campaigns.

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Many people have made this study possible and I would like to extend my appreciation to all--to my committee members for contributing valuable comments and suggestions, to Miss Evelyn Shapka for giving editorial assistance, to Clare Shier and Jim Copeland for setting up the programming, and to Miss Fran Cullen and the Nutrition and Food Marketing Section of the Alberta Department of Agriculture for making it financially possible. Especially I would acknowledge Dr. M.H. Hawkins, for without his inspiration I would neither have attempted nor achieved this task; and Dr. Ruth Renner, who was always ready with encouragement and a smile to boost my morale. Finally, I would like to thank my family and friends who cheerfully tolerated my irascibility occasioned by this effort.

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# CHAPTER 1

## INTRODUCTION

Results of the Nutrition Canada Survey indicate that Canadians are malnourished--a problem of the affluent as much as of the poor.[1] Yet resources exist in Canada to provide a wholesome diet across the country. This discrepancy is demanding increasing attention from government officials, the food industry, and consumer groups.

One problem is the apparent lack of concern for nutrition in the shopping and meal planning habits of the average consumer. In an effort to place more information directly in front of the consumer, some manufacturers are including detailed nutritional information on their labels. The Federal Government is considering a more comprehensive nutritional labelling program. However, the Department of Consumer and Corporate Affairs estimates that no more than 8 percent of consumers would use the information should it be available.[2]

The situation becomes one where the consumer must be motivated to study and use this information under the influence of an ever-increasing barrage of messages of all

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[1] Dr. Zak Sabry in an address at the Challenges in Food Marketing Conference, Edmonton, Alberta, March, 1974.
[2] Mrs. Sally Merchant, Department of Consumer and Corporate Affairs, Edmonton, Alberta. (Personal communication.)

types on and off the package. Nutritional labelling is an important facet of a trend toward a greater quantity and diversity of product labelling requirements.[1] If it is to compete successfully for consumer attention, it must be presented in a clear and understandable format.

If the information is to be useful to consumers, it must be factual, complete, and in terms the consumer can understand. To the average consumer, that is, one without a background in nutrition, the numbers and units have little meaning. Thus a reference system must be established to tell the consumer the adequacy and importance of a given amount of a nutrient.

The cost of any program will be in proportion to the extent and complexity of the information provided. In addition to the extra costs incurred in designing and printing the labels, increased costs will result from the monitoring programs which will ensure that the nutrients declared on the label are actually in the food. If consumers will not read the labels or cannot comprehend nutritional information so as to use it in purchase/serving decisions or in deriving non-use benefits, the costs of providing nutritional labelling are hard to justify.

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[1] Potential or actual labelling requirements also include unit pricing, open dating, and ingredient labelling.

## Objectives

The objectives of this study are the following:

1) To assess the extent of consumer interest in nutrition and nutritional labelling as indicated by interest in a questionnaire on nutritional labelling;

2) To assess consumer interest in nutritional labelling as indicated by the level of awareness of information presently appearing on food packages; and

3) To predict the possible use of different formats and types of information in reference to future label design.

## Hypotheses

Most information on labels must, under Canadian regulations, be given in both qualitative and quantitative terms. The hypotheses of this study are:

1) That, generally, consumers are not aware of the nutritional information which is now appearing on food product labels; and

2) That qualitative information is more acceptable to consumers than is quantitative. The quantitative information is given as units of nutrient per 100 grams of food and this does not give the consumer a frame of reference for nutritional adequacy.

## Scope and Methodology

This study is based on a personally administered survey of two hundred Edmonton consumers. Since Edmonton is considered a test market area for Canada, the city can be taken as generally representative of the nation. The sample was geographically dispersed throughout the city in an attempt to obtain a distribution by age, income, and education of the consumers sampled.

Categories of products for retail sale in Edmonton which have nutritional labelling are given in Table 1. Because it was felt that the survey would not have to encompass all information on all products, representative questions were designed.

TABLE 1

PRODUCT CATEGORIES FOR RETAIL SALE IN EDMONTON WHICH HAVE NUTRITIONAL LABELLING

| Product | Label Inclusions |
|---|---|
| Milk | Vitamins A and d |
| Skim Milk Powder | Vitamins A and D |
| Canned and Crystalline Fruit Juices | Vitamins A and C |
| Vegetable Juice | Vitamins A and D |
| Margarine | Vitamins A and D, Polyunsaturated Fats |
| Cereals | Thiamin, Riboflavin, Niacin, Iron, Protein, Fat, Carbohydrates, and Calories |
| Breads | Enriched Flour |
| Table Salt | Iodine |

The study was done in two phases. Initially fifty questionnaires were given and the results were tabulated (Phase 1). The questionnaire and procedure were modified before the remaining one hundred fifty questionnaires were completed (Phase 2).

## Limitations of the Research

The questionnaire is limited to packaged, processed food. Fresh food has little or no packaging, and labelling

information is restricted accordingly. This reflects one of the problems of nutritional labelling; namely, even complete labelling of packaged foods will affect only a portion of the diet.

Awareness of label claims is not the same as knowledge of the nutritional content of a food. The label declarations used in the survey refer only to what nutrients are added to foods. Nutrients are also present in food products from natural food sources. This study did not test the knowledge of consumers as to actual nutritive value of food products.

Because of financial and time constraints, there are weaknesses in the sample. The selection of stores was arbitrary and based on geographical dispersion (see Appendix B). The surveying was done throughout the week but always in the late afternoon. This method of sampling (called judgement sampling) can be expected to account for some of the discrepancies between the age distribution of the sample and the Edmonton population (see Appendix A). Although the data is not included, there could be a similar occurrance with the income and education distributions.

## Direction of the Study

Nutritional labelling is in its infancy and much research remains to be done. This study is an initial effort directed toward assessing the present position of consumer perceptions of current label information. It is hoped that some projections for future programs can be developed from the results.

The thesis is organized according to the following plan. Chapter II is a review of current literature on nutritional labelling from the U.S. and Canada. Chapter III deals with Phase 1 of the survey. In Chapter IV, the adaptations of the survey for Phase 2, the results, and a synopsis of the total are outlined. Chapter V is a summary and contains the concluding comments and recommendations.

## CHAPTER II

## LITERATURE REVIEW

As recently as 1968, references to nutritional labelling were directed at the dietician rather than at the average consumer.[1] This indicates the recent development of consumer interest in this subject. There is considerable political pressure to hasten nutritional labelling schemes because consumerism is prominent and growing,[2] although the lack of research would indicate that caution would be more prudent. The U.S. has begun a preliminary system, while Britain and Canada are being more restrained.

The U.S. program has stemmed from a national nutrition policy which states that every American should have an optimal diet.[3] This can possibly be achieved from the resources available but there are informational, distributional, and motivational problems which it is hoped labelling will, in part, correct.

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[1] Eugene H. Stevenson, "What is an Informative Label?" Journal of the American Dietetic Association , Vol. 52, No. 4 (April 1968), pp. 381-383.

[2] Richard McCormick, "Industry Comments on Nutritional Labelling," Food Product Development, (August-September, 1972), p. 6.

[3] D.M. Hegsted, "Development of a National Nutrition Policy," Journal of the American Dietetic Association, Vol. 62, No. 4 (April 1973), p. 394.

## Changing Patterns of Food Consumption

Changes in the North American lifestyle are markedly affecting food consumption. There is increased income and increased demand for leisure. The modern shopper is oriented outside the home so that food preparation has become a maintenance function rather than a central responsibility. Snacking and meals eaten away from home have changed the entire nature of eating. Yet changes in shopping/consumption habits must be highly motivated, and they tend to be slow because shopping is more often habitual than analytical.

Consumers expect the food industry to take over much of the responsibility for food preparation and quality. Thus, the industry must act to create trust and confidence that it is responsible for foods that are pure, safe, and nutritionally wholesome.[1] However, increasing malnutrition in a time of affluence is perhaps an indication that the industry is not keeping pace with demands.

Since the income elasticity for food is low in Canada, demand for food has only increased little due to increasing income over time. Engel's Law states that a decreasing

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[1] James D. Grant, "Nutritional Guidelines and Labelling," Journal of the American Dietetic Association, Vol. 60, No. 5 (May 1972), p. 382.

proportion of an increasing income is spent on food as a whole.[1] There is also an increase in demand from population growth, but this is also low. Thus, in an effort to expand demand, the industry is introducing new foods and new forms of traditional foods to appeal to consumers. Often these adaptations take the form of minimizing preparation time.

This type of activity is a reflection of the market structure. The food industry lies between the monopolistically competitive and oligopolistic models, where one expects non-price competition. This is manifested in the form of product differentiation (including the selling of services as well as food) and advertising. It has the effect of tilting the demand curve, or making the demand more inelastic.

Classical economic theory assumes that tastes are given for the time period being considered. However, changing products and changing information seem to imply that tastes can change (or be changed) over time.

Similarly, classical demand theory assumes that consumers make rational decisions about their distribution of expenditures and that they have sufficient information regarding the goods available and their associated marginal

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[1] Paul A. Samuelson and Anthony Scott, Economics: An Introductory Analysis (2nd Canadian edition; Toronto: McGraw- Hill Co. of Canada, Ltd., 1968), p. 229.

utilities to do this. A discussion of the need to provide more information and the adequacy of various formats implies that the consumer is not making fully informed choices.

Babcock states that enriched, fortified, and fabricated foods are making an increasing contribution to the diet.[1] However, there is no quick way for the housewife to tell which are the most nutritious or what foods they replace in the diet. Appearance can be deceptive, and nutritive value and palatability need have no connection. Composite foods make it impossible to apply the old standards of nutritional adequacy; for example, Canada's Food Rules[2] are based on food groups. However, nutritional content becomes more standardized with increased processing, so these are the forms most suited to nutritional labelling.[3]

## Purposes of Nutritional Labelling

Many purposes have been outlined for nutritional labelling. These have been summarized by the College of Family and Consumer Studies at Guelph, Ontario:[4]

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[1] M.J. Babcock, "A Proposed System for Nutritional Labelling," Food Technology, Vol. 25, No. 11 (May 1972), p. 1160.

[2] Nutrition Division, Department of National Health and Welfare, Canada's Food Guide (Department of National Health and Welfare, n.d.).

[3] Ibid.

[4] L.M. Brown, et al., Nutritional Labelling: A Review of Empirical Evidence and Annotated Bibliography (Guelph, Ontario:College of Family and Consumer Studies, March 1973), p. ii.

1) to help consumers plan and select balanced diets,

2) to help consumers select the best nutritional value at the point of purchase, or to get the most value for the food dollar,

3) to stimulate consumer education,

4) to encourage the production of more nutritious foods,

5) to improve consumer confidence in the food industry, and

6) to satisfy the consumers' "right to know".

These purposes are supported by Lenahan, et al. [1] Babcock and Murphy,[2] Cooke,[3] and Hegsted.[4]

Consumers like and support the information more than they use it. This support is created by perceived non-use benefits rather than those from direct use. As determined by Lenahan, et al., [5] consumer perception of labelling is that it will make the food industry more accountable. That is, it will discipline the market for the benefit of all--a

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[1] R.J. Lenahan, et al. , "Consumer Reaction to Nutritional Labels on Food Products," Journal of Consumer Affairs, Vol. 7, No. 1 (Summer 1973), pp. 2-4.

[2] M.J. Babcock and M.M. Murphy, "Two Nutritional Labelling Systems," Journal of the American Dietetic Association, Vol. 62, No. 2 (February 1973), p. 156.

[3] Judith A. Cooke, "Nutritional Guidelines and the Labelling of Food," Journal of the American Dietetic Association, Vol. 59, No. 2 (August 1971), p. 99.

[4] Hegsted, op. cit. , p. 395.

[5] R.J. Lenahan, et al. , "Consumer Reaction to Nutrition Information on Food Product Labels," Search Agriculture, Vol 2, No. 15 (1972), pp. 20-22.

function which can no longer be performed by the consumer because of the multiplicity and complexity of products. There was some evidence that direct use increased over time and with promotional activity.

## Professional Support of a Labelling System

A survey among nutritionists by Call and Hayes[1] showed considerable professional support for nutritional labelling. Eighty percent of those surveyed responded, giving a high priority for space and a suitable method of expression. Over 50 percent mentioned that information on the following should be included: protein, calories, fat; vitamins A, C, and D; iron and calcium. Forty-five to 50 percent wanted information on thiamin, sodium, and allergenic substances included. Eighty-one percent felt that a minimum level of a nutrient should be present before it is declared. In assessing any labelling scheme, this information needs to be supplemented with that from the food industry, consumer groups, and medical men.

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[1] D.L. Call and M.G. Hayes, "Reactions of Nutritionists to Nutrient Labelling of Foods," American Journal of Clinical Nutrition, Vol. 23, No. 10 (October 1970), pp. 1347-1352.

## Proposed Systems

The average consumer is not and does not want to be a clinical nutritionist to obtain an adequate diet.[1] This has necessitated a restructuring of labels from the traditional ones which were directed to nutritionists for dietary care and/or to regulatory agencies for monitoring programs for public health and safety.

There have been several systems of labelling proposed. Five were summarized by Tolley,[2] together with their advantages and disadvantages.

1) List on the label the amount of each nutrient in a standard serving of the food. The disadvantages are that natural variation in the content of the food would make precise and legal labelling difficult, if not impossible, unless wide tolerances were allowed; standard servings would have to be defined; and the amounts would not be meaningful to consumers without a background in nutrition. The main advantages are that the numbers are detailed and directly applicable to what is eaten. No calculations are required except that one would have to keep track of the nutrients in each food to determine total consumption.

2) Declare on the label the percent Recommended Daily

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[1] Grant, op. cit., p. 381.
[2] R.J. Tolley, "Will Consumers Really Use the Label?" Food Product Development, (April, 1972), pp. 46-48.

Allowance (%RDA) of each nutrient in a standard serving. This overcomes the disadvantage of 1 (above) of not providing consumers with a yardstick to measure the value of the food relative to requirements. It does not, however, account for natural variation in the food nor does it match the food purchasing and meal planning habits of the consumer. Intake from the daily diet must still be compiled.

3) Use a number to represent a range of the RDA supplied by a standard serving. For example,

1 represents 10-25% RDA

2 represents 25-40% RDA

3 represents 40-60% RDA.

One number would appear on the label for each nutrient included in label information. The consumer aims for an intake of 5 for an adequate amount of each nutrient. When ranges are given, natural variation is not so much of a problem and the bookkeeping is of a simpler nature.

4) Use the terms "fair", "good", or "excellent" to describe a range of %RDA present in a standard serving. This is one of the more popular schemes at the moment. It uses terms readily understood by the consumer , it tolerates natural variation because of its generality, and it would be cheap and simple to implement. The scheme should be adequate if a variety of foods is promoted along with an

explanation of the purpose in widespread educational programs.

5) Declare on the label that nutritional and meal planning information is available (free) from the manufacturer upon request. With this system information only goes to those who are interested and a lot of printing expense is not wasted. However, it means that the consumer must be sufficiently interested to write, and this would require considerable time and motivation for the variety of the average diet. This method would not reach those of borderline interest--those who would not go to the trouble of studying nutrition but would take note if the information were placed in front of them.

A sixth system is the Food Equivalent (FE) system proposed by Babcock and Murphy:[1] (6) Label the food with a nutritional rating against a balanced familiar food or the main ingredient after eliminating starch, sugar, and fat (calorie sources). Values would be expressed as percent or in a pie chart. The rating is based on the most limiting nutrient[2] and is given per calorie. Since energy

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[1] Babcock and Murphy, op. cit., pp. 155-161.

[2] The most limiting nutrient is that present in the food in the lowest proportion relative to the standard. For example, if an oatmeal cookie contains 50 percent of the iron and 33 percent of the protein of oatmeal porridge on a calorie for calorie basis, the cookie would be labelled as having 33 percent of the nutritive value of oatmeal porridge.

requirements supposedly determine food intake, use of the labels will not be influenced by packaging or serving size, or age of the consumer. Use of the limiting nutrient builds in a safety factor and would encourage balanced fortification. It can be compatible with past nutrition education and allows other factors such as price or convenience to be considered. It does not account for the presence of excesses of one or more nutrients.

## The U.S. Research Experience

In the U.S. there have been several experimental programs with varying degrees of success. Stokes and Haddock[1] indicated that consumers who look for nutritional information are white, affluent, and educated. They found that numerical or pictoral modes were better received than verbal ones, especially the numerical. However, there was no significant difference in purchase patterns for any mode. The availability of information did increase the nutritional quality of the diet over a period of time--for middle or upper socioeconomic classes and using considerable in-store motivational effort to encourage use of the program. This they interpreted as limited success. Consumers preferred to have only nutrients present in the product listed on the

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[1] Raymond C. Stokes and Rafael Haddock, Interim Report of the First Two Phases of the CRI/FDA Nutritional Labelling Research Program, (Washington, D.C.: Consumer Research Institute, Inc., August, 1969).

label rather than all nutrients including some with low or zero ratings.

Carman[1] indicates that the use of general information and specific types of information varies with income and education. Consumers with high income exhibited an interest in vitamins and minerals, additives, and preservatives. With incomes less than $5000 the consumer was mainly interested in protein. Overall, 18-20 percent expressed an interest in protein, fat, carbohydrates, vitamins, and minerals; 9-12 percent in saturated vs. unsaturated fats, additives, and chloresterol; and 1-5 percent in sodium and allergenic substances. Stokes and Haddock[2] confirmed these priorities.

The food equivalent (FE) system proposed by Babcock and Murphy[3] increased sales of the more nutritious product to an average (for eight products) of 63 percent of total sales vs. 55 percent for the U.S. Food and Drug Administration (FDA) system (using percent RDA) and 53 percent before the labelled packages were placed on the shelves. Babcock and Murphy feel that both the FDA and FE systems tend to underrate nutritional value.

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[1] James M. Carman, Consumer Uses of Ingredient Information on Packaged Food Products, CRI Working Paper No. 3, (Tenneck, N.J.:Consumer Research Institute, Inc., November 1969).
[2] Stokes and Haddock, op. cit.
[3] Babcock and Murphy, op. cit.

Lenahan, et al.[1] reported that interest in nutritional labels, especially interest in details, rose with income, education, and amount of shopping. It decreased with age. Perception of labels increased with promotion and decreased over time. Understanding and use increased with time exposure. Thus, promotion and time exposure are complementary if it is assumed that consumers must perceive, understand, and use the labels for a program top be effective. In the perception-understanding-use continuum, correlation with demographic variables was ambiguous. These research designs covered a relatively short time span and thus were unable to indicate the long run implications of any labelling program.

Lenahan, et al.[2] reported from their nutritional knowledge questions that the accuracy for protein, calories, and calcium increased over time. Protein was not labelled. These increases could have been stimulated by repeated informational messages. Food store promotion took the form of advertising, leaflets, in-store displays, and a TV special. For new products, the importance of nutrition and price in the purchase decision decreased, while the importance of advertising increased. Thus one might expect that unless nutritional information is incorporated into

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[1] Lenahan, et al. , "Consumer Reaction to Nutrition Information on Food Product Labels."
[2] Ibid.

advertising, it could become progressively less important in the purchase decision. New products account for about 20 percent of the total number on the market in one year.

## Problems in Labelling

Problems arise from any type of labelling program. These were summarized by Hegsted,[1] and were elaborated by Grant,[2] McCormick,[3] and Lenahan, et al.[4]

### Potential Exploitation

Any labelling program must be kept under the control of professionals, or it can be exploited by food faddists. This can occur because food consumption is partly an emotional issue. Thus the labels would have to be factual and avoid emotional overtones. However, any increase in the nutritional knowledge of consumers would help correct false ideas and make the falsity of sensational statements more obvious.

While one non-use benefit of labelling is encouragement for manufacturers to make food products more nutritious, it could be undesirable to have a nutrient "horsepower" race develop. This could be promoted by manufacturers of

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[1] Hegsted, op. cit.
[2] Grant, op. cit.
[3] McCormick, op. cit.
[4] Lenahan, et al., "Consumer Reaction to Nutrition Information on Food Product Labels."

fabricated foods because these have an apparent advantage over natural foods which contain an unbalanced spectrum of nutrients. Guidelines for fortification are necessary to prevent manufacturers from adding nutrients indiscriminantly, especially cheap ones. However, as nutrition becomes a basis of competition, it will become incorporated into advertising, which will benefit the effectiveness of the labelling program.

## The Format for Information

The units and references to be used pose another problem. They must be meaningful to the consumer. The system must not be so time-consuming in planning diets that it will not be used. This is an argument in favour of simplification.

The quality, as well as the quantity, of nutrients must be considered; examples of this problem include an expression of protein versus the protein efficiency ratio, niacin versus niacin equivalents (including tryptophan), etc. Similarly, the relative importance of the nutrients should be suggested, since they are not all equal. The nutrients must be those available at the end of shelf-life, not at the point of manufacture.

Space on labels is in short supply already. In order to increase the amount of information presented, labels

could be increased in size (an impossibility on some labels), the size of the printing could be reduced (leading to visual clarity and legal problems), some labels could be rearranged to make more efficient use of the space available, or nutritional information could be substituted for other information which is already present.

## Foods to Which Labelling Would Not Apply

In Nutrition Reviews[1] it was estimated that 30 percent of the food budget is spent on agricultural products which are eaten raw or are home-processed. A comprehensive program affecting the nutritive value of the average diet requires some accounting of their dietary contribution and natural variation.

Giant Foods[2] labelled, in an experimental program, forty-eight foods including meat, produce, dairy and bakery products. Non-packaged products carried the information on shelf labels with apparent success.

Another area of concern is non-nutritive foods such as spices which serve other functions. Most commonly, these are organoleptically[3] or aesthetically satisfying rather

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[1] "Nutritional Labelling," Nutrition Reviews , Vol. 30, No. 11 (November 1972), p. 248.

[2] Reported in Lenahan, et al. , "Consumer Reaction to Nutrition Information on Food Product Labels," , pp. 8-20.

[3] Refers to the sense of taste

than nutritionally essential.

## Costs to the Industry

The benefits of any program must be weighed against the costs, which will be in proportion to the extent and complexity of the information provided. To the degree that the increased costs to the industry cause a leftward shift in the supply curve, the costs will eventually be borne by the consumer. However, in an industry which is not perfectly competitive and in which excess (economic) profits can persist, there is the possibility of some of the costs being absorbed by the industry in a reduction of excess profits.

Babcock and Murphy[1] estimated that the nutritional analysis of one product would cost $770 plus $175 for each sample monitored. These would be subject to price increases. Costs to the industry are also incurred by the redesign of labels. For U.S., due to regulated changes in 1968, Babcock and Murphy quoted estimates of $65 million. Total consumption expenditure for food that year was $99.7 billion,[2] so the changes cost 0.065 percent of total expenditure on food.

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[1] Babcock and Murphy, op. cit.

[2] U.S. Department of Agriculture, Food Consumption, Prices, Expenditures, Supplement to Agricultural Report No. 138 (Washington: U.S.D.A., Economic Research Service, November, 1971), Table 107.

The labelling and resultant monitoring must be feasible for small manufacturers. Otherwise, under a compulsory program, small firms will be forced out of business and concentration in the industry will increase.

Lack of Nutritional Knowledge

Present and future labelling statements are affected by gaps in current knowledge. There is a lack of data on nutrient variability in mans' requirements, the interrelationships of nutrients in a mixed diet, and variation in the nutritional content of foods from processing and environmental factors.[1] Specific information is also lacking for nutrients such as vitamin B6, pantothenic and folic acids, and for some of the trace elements. A nutrition data bank to collect this data as it is found is recommended. Nutrient assay methodology greatly requires advancement since it must keep pace with nutritional standards, labelling, and technology.

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[1] McCormick, loc. cit.

## Nutrition Education

Any nutritional labelling program has need of complementary consumer education. This was mentioned by Hartley,[1] Bauman,[2] The American Dietetic Association,[3] and Lenahan, et al.[4] Informing the consumer must be done in lay language--comprehension of terminology cannot be assumed by experts. There can be problems with the lay version of technical language: Does one refer to vitamin E or alpha-tocopherol acetate? Will the consumer mentally confuse lysine with lysol? Even for non-technical information, the consumer will need help in applying it.

Labelling offers potential as a device for nutritional education because it will call attention to nutritive value as an inherent value of food. An overall labelling program would increase public knowledge of nutrition and thus serve as an aid in nutrition education.[5]

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[1] W. Howard Hartley, "Ingredient Labelling," Food Technology, Vol. 25, No. 5 (May 1971), p. 473.
[2] Howard E. Bauman, "Nutrient Labelling--Purpose and Approach," Food Technology , Vol. 25, No. 6 (June 1971), p. 612.
[3] "Policy Statement of the American Dietetic Association on Nutritional Labelling," Journal of the American Dietetic Association , Vol. 60, No. 3 (March 1972), p. 223.
[4] Lenahan, et al. , "Consumer Reaction to Nutrition Information on Food Product Labels."
[5] Ibid.

## Framework for the Study

The issue of nutritional labelling is complex and contains many internal controversies. It appears that there is a need among the general population for improved nutrition, and to some extent there is a concomitant desire for appropriate information. Both the food industry and regulatory agencies are faced with decisions which must be made under a lack of specific information (since U.S. research is of a preliminary nature while data for Canada is totally lacking).[1]

The major objective of this study is to evaluate consumer awareness (or perception) of nutritional information which is presently available. The perception rate might indicate what could be expected for future programs of similar information. Differences in perception among the various types of information could direct future efforts toward improved effectiveness.

This type of research is important because instruments of consumer protection, to be useful, must be perceived by the consumer. Lenahan, et al.[2] felt that information on consumer perceptions of labels was useful because perception of labels is a precondition for their use, it is indicative

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[1] Brown, et al., op. cit., p. 3.
[2] Lenahan, et al., "Consumer Reaction to Nutrition Information on Food Product Labels," p. 10.

of consumer interest, and it can be a measure of the intensity of effect of any labelling program.

# CHAPTER III

## PHASE 1: THE INITIAL SAMPLE

Fifty-five questionnaires were administered in Phase 1 of the survey. Time was a major constraint and the study was to be interpreted as a pilot project. It was hoped that this would give a general indication of consumer perception which could then be investigated in more detail with more refined research should this be desired.

### The Sample

It was decided that the most suitable method of determining the level of awareness of nutritional labelling would be to distribute the questionnaire to a sample of consumers who were purchasing food supplies in selected local supermarkets. By conducting the interviews in stores, it was hoped that the shoppers contacted were those who were responsible for most shopping decisions. While household surveys are more convenient to answer and can be selected (on the basis of zoning and districts) by income, they are slower to administer.

The questionnaires were distributed approximately evenly among the supermarkets involved. The stores used in the study are listed in Table 2 and shown on the map in Appendix B.

TABLE 2

STORES USED IN PHASE 1 OF THE SURVEY

| | |
|---|---|
| Safeway | 1) 101 Ave. and 117 St. |
| | 2) 82 Ave. and 109 St. |
| | 3) 40 Ave. and 114 St. |
| Woodwards | 4) Southgate 51 Ave. and 111 st. |

As determined by responses to the questionnaire, the sample was not socioeconomically representative of the Edmonton population, but it did cover the range of the variables considered. (See Series 5, Table 3, Chapter III, and Appendix A.) The age and income distributions might have been more descriptive if the breakdowns had been finer; but, on the other hand, the answers might have been less accurate.

## The Questionnaire

The questions were multiple choice in form. These gave a specific series of response choices to consumers. There were no open-ended questions. The effect of guessing was not accounted for because educated guesses could result from unconscious awareness of labelling.

The questionnaire was limited to ten questions in addition to those on socioeconomic variables so that it could be answered in a short time. It was pretested on a sample of ten for timing and clarity before being compiled in the finished form.

Since one of the objectives of the study was to determine the amount of detail perceived by consumers, the questions were asked in a sequence of increasing specificity. Because some of the later questions could indicate answers to earlier ones, each series of questions was placed on a separate page. It was the responsibility of the interviewer to ensure that the questionnaire was filled out from first to last, and that there be no looking back.

The qualitative questions had no provision for the respondants to indicate that they did not know the answer. This was most likely done by leaving the question blank. If the correct answer were yes, blanks were counted as wrong. However, if the correct answer were no, all blanks were counted as right answers. Thus, for these questions the results are biassed in favour of greater consumer knowledge.

## Results

Table 3 serves several purposes. First, it illustrates the format of the questions and overall layout of the questionnaire. Secondly, it shows the pattern of results in absolute numbers and percent terms. Series 1 and 5 give the characteristics of the consumers sampled; while Series 2, 3, and 4 are the questions actually pertaining to labelling in Canada.

TABLE 3

POSITIVE RESPONSES TO THE QUESTIONNAIRE (PHASE 1)

| No. of Responses | % of Sample | Question |
|---|---|---|
| Series 1 | | |
| | | 1. Do you do |
| 34 | 68.1 | Most of the food purchasing for your family |
| 12 | 21.8 | About half of the food purchasing for your family |
| 09 | 16.4 | Very little of the food purchasing for your family |
| | | 2. Who makes most of the decisions regarding food purchases? |
| 22 | 40.0 | You alone |
| 25 | 45.5 | You and your spouse |
| 02 | 03.6 | You, your spouse, and your children |
| 06 | 10.9 | Someone else |
| Series 2 | | |
| | | 3. What is the state of nutritional labelling in Canada today? |
| 11 | 20.0 | We have it on a compulsory basis |
| 38 | 69.1 | We have it on some products on a voluntary basis |
| 04 | 07.3 | We have no nutritional labelling |
| 02 | 03.6 | No answer |
| Series 3 | | |
| | | 4. Which of the following beverages have vitamin C added to them? |
| 44 | 80.0 | Sunripe apple juice |
| 15 | 27.3 | Ocean Spray cranberry cocktail |
| 00 | 00.0 | Instant coffee |
| 19 | 34.5 | Lalani pineapple juice |
| 05 | 09.1 | 2% milk |
| 45 | 81.8 | Tang |
| 09 | 16.4 | Heintz tomato juice |
| 18 | 32.7 | V-8 juice |

TABLE 3 (continued)

| | | |
|---|---|---|
| | | 5. Which of the following foods contain added vitamin D? |
| 12 | 21.8 | Corn oil margarine |
| 19 | 34.5 | Skim milk powder |
| 18 | 32.7 | Skim milk |
| 30 | 54.5 | 2% milk |
| 11 | 20.0 | Chocolate milk |
| 12 | 21.8 | Apple juice |
| | | 6. Which of the following cereals have added to them the B vitamins niacin, thiamin, and riboflavin? |
| 13 | 23.6 | Nabisco Shreddies |
| 09 | 16.4 | Nabisco Shredded Wheat |
| 35 | 63.6 | Kellogg's Cornflakes |
| 48 | 87.3 | Kellogg's Special K |
| 25 | 45.5 | Kellogg's Product 19 |
| 22 | 40.0 | Kellogg's Rice Krispies |
| 06 | 10.9 | Sunnyboy |
| 04 | 07.3 | Quaker Oats |
| | | 7. Is table salt in Canada iodized? |
| 44 | 80.0 | Yes |
| 10 | 18.2 | Some |
| 01 | 01.8 | No |
| 00 | 00.0 | No answer |

Series 4

| | | |
|---|---|---|
| | | 8. The amount of vitamin C in a 4 oz. glass of Tang is about: |
| 10 | 18.2 | No answer |
| 30 | 54.5 | 10 mg |
| 10 | 18.2 | 30 mg |
| 05 | 09.1 | 60 mg |
| | | 9. The amount of vitamin D in a quart of homogenized milk is about: |
| 13 | 23.6 | No answer |
| 09 | 16.4 | 50 mg |
| 11 | 20.0 | 50 IU's |
| 22 | 40.0 | 400 IU's |

TABLE 3 (continued)

| | | |
|---|---|---|
| | | 10. The amount of protein in a 1 oz. serving of Special K is about: |
| 10 | 18.2 | No answer |
| 23 | 41.8 | 1 g |
| 16 | 29.1 | 6 g |
| 05 | 09.1 | 20 g |
| | | 11. The amount of niacin in a 1 oz. serving of cornflakes is about: |
| 12 | 21.8 | No answer |
| 27 | 49.1 | 1 mg |
| 13 | 23.6 | 6 mg |
| 03 | 05.5 | 20 mg |
| | | 12. The amount of iron (Fe) in a 1 oz. serving of cornflakes is about: |
| 13 | 23.6 | No answer |
| 31 | 56.4 | 4 mg |
| 06 | 10.9 | 40 mg |
| 05 | 09.1 | 1 g |

Series 5

| | | |
|---|---|---|
| | | 13. The level of education you completed is: |
| 01 | 01.8 | Grade School |
| 16 | 29.1 | Secondary School |
| 10 | 18.2 | Technical Training |
| 22 | 40.0 | University |
| 06 | 10.9 | Post-graduate University |
| | | 14. Your annual gross income for your family is: |
| 03 | 05.5 | No answer |
| 05 | 09.1 | Less than $3000 |
| 13 | 23.6 | $3000-6000 |
| 12 | 21.8 | $6000-9000 |
| 05 | 09.1 | $9000-12,000 |
| 17 | 30.9 | More than $12,000 |
| | | 15. Your age, as of your last birthday, was: |
| 07 | 12.7 | Less than 21 years |
| 34 | 69.1 | 21-35 years |
| 07 | 12.7 | 35-50 years |
| 03 | 05.5 | More than 50 years |

The results varied widely among products. While, as expected, knowledge of label claims is low for many products, some products have a definite image of being a source of certain nutrients.

Qualitative Questions

Vitamin C -- This is a well publicized vitamin and consumers are conscious of the fact that it can be added to the daily diet from several sources. Eighty percent were aware that it is added to apple juice and Tang; for the latter this could be due to publicity which at times has surrounded the assimilability of the vitamin in crystalline fruit juices. Only 30 percent were aware that cranberry, pineapple, and V-8 juices are similarly fortified.

A small proportion thought that vitamin C was added to tomato juice. It would be interesting to compare this result with the level of consumer knowledge regarding the fact that tomato juice is a natural source of vitamin C. It is possible there was some confusion on this point when consumers answered the questionnaire, although the questions explicitly referred to added vitamins.

Everyone questionned knew that instant coffee was not a source of vitamin C; almost everyone knew the same for skim milk. Thus, it appears that the majority of consumers have

an idea of the more common sources of vitamin C. Presumably some of this information has been learned from reading labels.

Vitamin D -- Supplements of vitamin D are not as well recognized. Only 22 percent of the consumers sampled were aware that it is added to corn oil margarine and 37 percent that it is added to skim milk powder. Since 33 percent thought it was added to skim milk and 22 percent thought it was added to apple juice, it does not seem that the label claims are having a significant effect on consumer knowledge. The exception is 2% milk--added vitamin D was recognized by 54 percent of the sample.

In several instances consumers commented that they did not know whether they were drinking skim or 2% milk. Inasmuch as "skim" refers to a nutritive change in the milk, even that may not always be perceived.

Chocolate milk was chosen consistently less as a nutrient source than was 2% milk. This may reflect an image that "plain" milk is good for you while chocolate milk is a treat, and the two qualities are mutually exclusive.

As far as the 20 percent who thought vitamin D was added to apple juice were concerned, there seemed to be a problem in distinguishing between the vitamins. That is, they knew apple juice was a source of something but were not

sure just what. This illustrates the generally hazy background consumers have in nutritional education.

The need for vitamin D has not been emphasized to the same extent as that for vitamin C. Thus consumers are not as conscious of it. Getting this vitamin from food sources has not been as essential because many children (the age group with the greatest requirement) are given supplements extracted from fish liver oils in the winter. In the summer it is assumed they are exposed to enough sunshine for the body to manufacture sufficient amounts.

B-Complex Vitamins --- The average consumer did not exhibit a great deal of interest in the B-complex vitamins thiamin, niacin, and riboflavin. Kellogg's has been successful in promoting the idea that they are fortifying their cereals; 40-87 percent of the consumers were aware of the vitamins added by Kellogg's as compared to 24 percent for Nabisco Shreddies. The levels and variety of fortification are the same for both companies.

The range for Kellogg's was due to product variation. Special K had the highest rating as a vitamin source. It may be possible that the emphasis on protein in Special K advertising has improved its image in terms of all nutrients. Cornflakes had the next highest rating at 62 percent.

Recently Kellogg's Cornflakes ads were claiming "fortified with three essential vitamins, iron, and love"displayed in a heart on the front of the package and in verbal statements. Love is missing from the label now (presumably a legal restriction) but the nutrients are still listed within a red heart. This appears to be having more effect than the half inch type on the front of the Product 19 package which only creates awareness in 45 percent of consumers. Rice Krispies had the lowest nutritional rating, In fact, the fortification levels for vitamins and iron is identical in all Kellogg's products, although the protein contents vary.

It does not appear that large print on the front of the package is necessarily more effective than small print on the back. The message is better perceived and retained if it can be made less impersonal. Cereal boxes were mentioned by some consumers as having an advantage over most packages in that they reach the table and many people read the fine print while they are eating. A package which goes from the cupboard to the garbage does not have much opportunity to be read.

Only 11 percent of the consumers believed that Sunnyboy and 7 percent that Quaker Oats were fortified. This might have been higher if the questions had not be biassed in favour of non-fortified products. With these products, and

with Shredded Wheat, there must be a distinction between fortification and the product being a natural source of the vitamins.

Iodine -- Eighty percent of the consumers sampled were aware that table salt in Canada constituted iodized. Only 1.8 percent believed that it is not. The remainder is consumers who believe it is possible to buy both. This confusion could have several sources. First, uniodized salt is available in Canada for manufacturing, but this is not the same product as table salt. Second, uniodized salt is available in the U.S. and people who have travelled may not remember where they have seen it. Third, to cater to the health food market, health food stores are selling "pure" sea salt which presumably is not iodized (but one could question the healthfulness of sea salt in areas where foods are naturally iodine deficient and goitre is endemic).

Quantitative Questions

Forty percent of the sample chose the correct amount of vitamin D per quart of homogenized milk. This makes an interesting comparison with the 26 percent who believed that vitamin D was added to milk (from the qualitative questions). Some of this is likely due to guessing, but some could also be due to confusion about the vitamins.

Iron in cornflakes had the largest proportion of correct answers, but it is felt this question was biassed in favour of the correct answer because that answer was the smallest number listed in the answers. From Table 3 it can be seen that for the cereal products and Tang the smallest number was chosen with highest frequency, then the middle number, and the largest number chosen least. Consumers were of the opinion that these products were "not supposed to be very good for you" so they picked the smallest number given.

The remaining quantitative questions were relatively inadequately answered. They were at approximately the same level as the more inadequate responses in the qualitative section.

Demographic Variables

By visual inspection, there were no apparent trends in the age, income, or education breakdowns. However, for certain products the level of awareness did appear to be related with these variables as expected. It did not occur frequently enough to be considered conclusive. Due to the nature of the data which was derived, statistical analyses were not performed.

Stronger trends might have emerged if the sample, and thus the numbers in each category, had been larger. In this

study, a single response had a relatively large effect on the percentage results, especially in those categories containing less than ten consumers.

In some cases, the low income groups had a high level of awareness relative to the total sample. This was assumed to be due to the student population which is educated but is living on a restricted income.

## Summary

Results of the study appear to be favourable for future development of nutritional labelling. A general interest in the subject was indicated by the response to the questionnaire (no one refused to fill one out) and the low proportion of unanswered questions (see Table 3). The lowest levels of awareness, which were for quantitative information and some less well-known vitamin sources, were on par with the eastern U.S. results reported by Lenahan, et al.[1] For some products and some nutrients, awareness was considerably higher.

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[1] Lenahan, et al. , "Consumer Reaction to Nutrition Information on Food Product Labels," p. 20.

# CHAPTER IV

## PHASE 2: THE SECOND SURVEY

Phase 2 developed from a decision to expand the survey. It was hoped that this would give greater support to the initial findings. It would also allow for regional analysis of the city since the sample was larger. The questionnaires were given four months after those in Phase 1.

### The Sample

Phase 2 includes the results from 145 additional questionnaires (for a total of 200). Once again, the surveying was done in selected locations of the city. The supermarkets chosen are listed in Table 4 and are shown on the map in Appendix B.

TABLE 4

LOCATIONS USED IN PHASE 2 OF THE SURVEY.

| | |
|---|---|
| Bonnie Doone | 82 Ave.& 83 st. |
| Discount | 7939 - Argyll Road. |
| Londonderry | 137 Ave.& 66 st. |
| Meadowlark | 87 Ave.& 156 St. |
| Southgate | 51 Ave.& 111 St. |

The procedure of surveying was altered slightly in that the questionnaires were not always handed out within the food store. The four shopping centres all have food stores on location, but it was more convenient to do the surveying in the malls. This is because the atmosphere was more relaxed than in the grocery aisles.

## The Questionnaire

Basically, the same questionnaire was used for the second phase of the study. However, the qualitative questions were modified in structure to remove the bias in favour of non-fortified products.

For example, for the question "Is vitamin C added to the following beverages?", the responses were set up as

| Phase 1 | Phase 2 | Yes | No | Don't know |
|---|---|---|---|---|
| .. apple juice | apple juice | .. | .. | .. |
| .. cranberry juice | cranberry juice | .. | .. | .. |
| .. instant coffee | instant coffee | .. | .. | .. |

This set of response choices extracted more explicit information from the consumers questioned than did the original format (see page 29).

## Results

The results, as a percentage of 145, are presented in the questionnaire form in Table 5. Again, this gives the characteristics of the sample as well as the nature of the responses. The numbers for unanswered questions were determined by subtraction of all answers from the total number of questionnaires filled out; this blank did not appear on the original questionnaire.

TABLE 5

RESPONSES TO THE PHASE 2 QUESTIONNAIRE (IN PERCENT)

| % of Sample | Question |
|---|---|
| Series 1 | |
| | 1. Do you do: |
| 69.0 | Most of the food purchasing for your family |
| 20.7 | About half the food purchasing for your family |
| 10.3 | Very little of the food purchasing for your family |
| | 2. Who makes most of the decisions regarding food purchases? |
| 46.9 | You alone |
| 43.4 | You and your spouse |
| 05.5 | You, your spouse, and your children |
| 03.4 | Someone else |
| Series 2 | |
| | 3. What is the state of nutritional labelling in Canada today? |
| 26.9 | We have it on a compulsory basis |
| 64.8 | We have it on some products on a voluntary basis |
| 04.8 | We have no nutritional labelling |
| 03.4 | No answer |

TABLE 5 (continued)

Series 3

| | Yes | No | Don't know | No answer |
|---|---|---|---|---|
| 4. Is vitamin C added to the following beverages? | | | | |
| Sunripe apple juice | 76.6 | 04.1 | 17.9 | 01.4 |
| cranberry cocktail | 31.7 | 16.6 | 49.0 | 02.8 |
| instant coffee | 00.7 | 64.1 | 31.0 | 04.1 |
| Lalani pineapple juice | 33.8 | 20.7 | 40.7 | 04.8 |
| Tang | 80.7 | 04.1 | 13.1 | 02.1 |
| 2% milk | 27.6 | 45.5 | 23.4 | 03.4 |
| Heintz tomato juice | 29.0 | 30.3 | 35.2 | 05.5 |
| V-8 juice | 43.4 | 18.6 | 35.2 | 02.8 |
| 5. Is vitamin D added to the following foods? | | | | |
| corn oil margarine | 20.1 | 18.6 | 56.6 | 02.8 |
| skim milk powder | 42.1 | 13.1 | 41.4 | 03.4 |
| skim milk | 33.1 | 18.6 | 43.4 | 04.8 |
| 2% milk | 43.4 | 15.9 | 35.2 | 05.5 |
| chocolate milk | 32.4 | 22.1 | 42.1 | 03.4 |
| apple juice | 29.7 | 29.0 | 37.2 | 04.1 |
| 6. Are the B vitamins niacin, thiamin, and riboflavin added to the following cereals? | | | | |
| Nabisco Shreddies | 44.1 | 08.3 | 39.3 | 08.3 |
| Nabisco Shredded Wheat | 46.2 | 09.2 | 36.6 | 08.3 |
| Kellogg's Cornflakes | 57.9 | 06.9 | 27.6 | 07.6 |
| Kellogg's Special K | 73.1 | 02.1 | 18.6 | 06.2 |
| Kellogg's Product 19 | 41.4 | 03.4 | 45.5 | 09.7 |
| Kellogg's Rice Krispies | 46.2 | 11.7 | 33.8 | 08.3 |
| Sunnyboy | 24.8 | 23.4 | 43.4 | 08.3 |
| Quaker Oats | 22.1 | 27.6 | 42.1 | 08.3 |

| % of sample | Question |
|---|---|
| | 7. Is table salt in Canada iodized? |
| 78.6 | Yes |
| 11.7 | Some |
| 04.8 | No |
| 04.8 | Don't know |
| 02.8 | No answer |

TABLE 5 (continue)

| Series 4 | | |
|---|---|---|
| | 8. The amount of vitamin D in a quart of homogenized milk is about: | |
| 25.5 | | No answer |
| 27.6 | | 50 mg |
| 28.3 | | 50 IU's |
| 18.6 | | 400 IU's |
| | 9. The amount of vitamin C in a 4 oz. glass of Tang is about: | |
| 22.8 | | No answer |
| 51.7 | | 10 mg |
| 21.4 | | 30 mg |
| 04.1 | | 60 mg |
| | 10. The amount of protein from a 1 oz. serving of Special K is about: | |
| 24.8 | | No answer |
| 41.4 | | 1 g |
| 24.1 | | 6 g |
| 09.7 | | 20 g |
| | 11. The amount of niacin in a 1 oz. serving of cornflakes is about: | |
| 29.7 | | No answer |
| 44.1 | | 1 mg |
| 22.8 | | 6 mg |
| 03.4 | | 20 mg |
| | 12. The amount of iron (Fe) in a 1 oz. serving of cornflakes is about: | |
| 27.6 | | No answer |
| 53.1 | | 4 mg |
| 09.0 | | 40 mg |
| 10.3 | | 1 g |

TABLE 5 (continued)

Series 5

13. The level of education you completed is:

| | |
|---|---|
| 02.8 | No answer |
| 08.3 | Grade School |
| 40.0 | Secondary School |
| 16.6 | Technical Training |
| 27.6 | University |
| 04.8 | Post-graduate University |

14. Your annual gross income for your family is:

| | |
|---|---|
| 05.5 | No answer |
| 01.4 | Less than $3000 |
| 14.5 | $3000-6000 |
| 13.8 | $6000-9000 |
| 23.4 | $9000-12,000 |
| 41.4 | More than $12,000 |

15. Your age, as of your last birthday, was:

| | |
|---|---|
| 00.7 | No answer |
| 08.3 | Less than 21 years |
| 46.9 | 21-35 years |
| 28.3 | 35-50 years |
| 15.9 | More than 50 years |

.....

Most of the consumers sampled were aware that some nutritional information on Canadian products exists. Twenty-seven percent believed it to be a compulsory system, while 64.8 percent felt it was voluntary. Only 4.8 percent thought there was no labelling on products. Three percent did not answer the question, likely indicating they did not know the answer.

Qualitative Questions

Vitamin C -- With the new format, 76.6 percent of the consumers questioned thought that apple juice contained added vitamin C, as did 80.7 percent for Tang. Thus the well-known sources of vitamin C, as indicated in Phase 1, are known with a fair degree of confidence. The more unfamiliar juices (cranberry, pineapple, and V-8) had slightly higher proportions of correct responses than in Phase 1, but these were about half the level of those for the more common juices.

As was expected, the proportion of correct answers for the unfortified products dropped from a range of 84-100 percent in Phase 1 to 30-64 percent in Phase 2. Most of the difference was absorbed by the "don't know" category, except for tomato juice, which had an even split among all the choices. This might indicate confusion between added and natural vitamin C.

Vitamin D -- In the larger sample, vitamin D remains relatively unknown. Consumers were most conscious of additions to skim milk powder and to 2% milk with positive responses of 42.1 and 43.4 percent, respectively. Only 22.1 percent were aware it is added to margarine. Approximately 30 percent believed it was added to skim milk, chocolate milk, and apple juice--a higher proportion than chose the negative (that is, correct) reply. Generally, consumers had

more confidence in the positive replies than in the negative, with the difference being absorbed by "don't know."

2% milk is the best recognized product in this respect; it had the highest proportion of correct answers and the lowest of "don't know." This can be explained by assuming that milk is drunk for its nutritional value while some of the other products serve other purposes.

B-Complex Vitamins -- The Kellogg's products continued to hold their high nutrition rating, Special K remaining well above the others with 73.1 percent of consumers aware of fortification. Cornflakes dropped from Phase 1, possibly due to the longer time which had elapsed since fortification was mentioned in its advertising. However, it still commanded more awareness than Product 19, Rice Krispies, or Nabisco Shreddies, which were at about the same relatively low level.

Non-fortification was not as well recognized as fortification. For shredded wheat, only 9.0 percent of the consumers chose the correct response. Forty-six percent chose the affirmative answer--about the same level as for the other Nabisco product. Thus, in this case, there is apparently no distinction in the consumers' minds between whole grain and processed dry cereals; depending on the natural nutrients in the former, it may or may not affect

the nutritive value of the diet.

A higher proportion recognized that cooked cereals are not fortified, but it was balanced by an equal proportion who believed that they are. The majority of consumers indicated ~~that~~ they did not know the answer, and if those who did not answer are included, the rate climbs to over one half of the total.

Iodine -- As in Phase 1, knowledge regarding the addition of iodine to salt is high. The correct response accounted for 78.6 percent of the total, while an additional 11.7 percent thought that some salt is iodized. Sources of confusion in this regard were outlined in Chapter III.

This left 2.1 percent who believed that salt is not iodized and 4.8 percent who did not know. The 2.8 percent who did not answer probably did not know as well. This level of awareness is surprisingly high in view of the lack of publicity surrounding iodine needs and goitre. On the other hand, the message is very simple since it is qualitative only.

Quantitative Questions

Approximately one quarter of the consumers questioned did not answer these questions, about the same proportion as in Phase 1. These respondents would be those who did not

know the answer and did not want to guess.

Numbers choosing the correct answer for vitamin D fortification of homogenized milk dropped significantly from Phase 1. The apparent explanation for this is that the Phase 2 sample is more evenly distributed in age than was that of Phase 1. The first phase concentrated on the 21-35 year old age group and since this is the time when most women are concerned with young children, they are most involved with milk.

Fortification of Tang and the dry cereals continued to be assumed at low levels. This resulted in a majority of correct responses only for iron in cornflakes, as in Phase 1. Because the multiple choice questions limited the choice of answers for consumers, these questions could have yielded more useful information if they had been open ended.

Demographic Variables

The second sample was not analyzed statisticall due to the nature of the data. Visual inspection indicated isolated trends for specific products. The ambiguity of these results could have several sources. Trends were sometimes broken for a specific classification. Variation occurred with different types of products, such as cooked vs. processed cereals. In many cases, the number of respondents in any socioeconomic classification was small.

The predominant trend emerging from the education breakdown is that those with post-graduate education are cautious. They picked the "don't know" reply with the highest frequency in almost all cases. However, this was a small sample category so the results must be qualified.

Regional Breakdown

There was some difficulty in getting questionnaires filled out in different parts of the city. Londonderry, Meadowlark, and Southgate posed no problem. But at Bonnie Doon, a lower income area where one would expect lower interest in nutrition, the refusal rate was 1 out of 2 rather than 1 out of 20 as at the other shopping centres. At the discount store the refusal rate was 1 out of 5; therefore, although these consumers may have lower income, they may also have a higher interest in value.

A frequency distribution for the proportion of correct answers relative to the study average is presented in Table 6. While this does not indicate results for specific products, it does show definite trends. Southgate, which is in an upper-middle class area and attracts a cosmopolitan variety of shoppers, had higher levels of awareness than the eastern (low income) sections of the city, including Bonnie Doon and Londonderry.

TABLE 6

FREQUENCY DISTRIBUTION OF PERCENT CORRECT RESPONSES FOR THE REGIONS RELATIVE TO THE AVERAGE

that they have little nutritive value. In fact, the cereals do contain nutrients and the information is

| | high | average | low |
|---|---|---|---|
| Southgate | 16 | 0 | 3 |
| Discount | 13 | 9 | 6 |
| Meadowlark | 11 | 9 | 8 |
| Bonnie Doon | 11 | 6 | 11 |
| Londonderry | 3 | 6 | 19 |

## Synopsis of Phase 1 and Phase 2

Overall findings from the larger sample in Phase 2 generally confirmed those from Phase 1. The results remained varied among products--from high levels of awareness where the labelling was coupled with promotional and/or educational efforts to low levels where label information was not drawn to the attention of the consumer. Consumer interest remained generally good.

The sample in Phase 2 was more evenly distributed among the socioeconomic variables than in Phase 1. This is illustrated in Appendix A, along with a comparison of the

age variable with Edmonton population data. A map of Edmonton showing the locations of the survey and the city's general income distribution is included in Appendix B .

Consumer Interest

While there was some unwillingness by consumers to answer the questionnaire in certain regions of the city, this was limited to about one quarter of the total sample. The proportion of unanswered questions remained low.

Consumers were willing to discuss the questionnaire, which prolonged the interviewing time from an anticipated 5 minutes to 15-20 minutes. The most common questions were: "What were the right answers?","How many people knew the right answers?", and "What changes might happen to nutritional labelling?" Many people were apologetic about the fact that they did not know the information; they felt they should. Several consumers said they were going to check their labels when they got home now that their interest had been aroused.

A few mentioned that we should have more labelling, but they did not necessarily read what is already available. One respondent stated that nutritional labelling should be provided by the manufacturers so that the consumer could consult it as desired even though this might only be once every six months. In this case, the respondent was not

willing to pay for this service because "food prices are high enough already."

There were some complaints about the lack of frame of reference for the labelling which was already present. Consumers pointed out that they did not know what an international unit (IU) was nor did they have any way, for example, of telling what proportion of the daily requirement was provided by 6 g of protein.

Quantitative Information

That the responses consistently decreased in frequency from the smallest to the largest choice of nutrient indicates the replies were guesses. They still, however, illustrate some valid points.

First, consumers continue to buy and consume these products, even though they believe they are getting little nutritive value. That is, purchases are not based on nutritional content.

Second, even though they are consuming a product which they believe has little value, they do not check the package to see what the actual value is (because they are afraid of having their fears confirmed?). It is perhaps fortunate for the general health in North America that the consumer errors are low rather than high.

Interest in quantitative information may depend on the image of the product. For instance, most people regard milk as a nutritious and necessary product; the awareness of the amount of vitamin D in milk was greater than for the other products considered in this series of questions. They were, by the consumers' admissions, not seen as a nutrient source and thus there was little interest in the nutritive content.

Quantitative vs. Qualitative Questions

Results of the study confirmed the hypothesis that qualitative information is better perceived and retained than is quantitative. In all instances there were more correct responses to the qualitative question than for the corrosponding quantitative one when a specific product and nutrient were involved.

The qualitative questions drew correct responses from a high of 80.7 percent for vitamin C in Tang to a low of 22.1 percent for vitamin D in corn oil margarine. The low value was comparable to the proportion of correct responses in the quantitative questions, which ranged from 18.6-24.1 percent (excluding iron in cornflakes, which was apparently a biassed question).

## Summary

The study gives an encouraging outlook for the future of nutritional labelling. That consumer perceptions are much higher than expected in some instances indicates that there are meaningful ways to communicate this type of information to consumers.

# CHAPTER V

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## Summary

The first hypothesis of this study, that consumers generally are unaware of the nutritional information presently appearing on food product labels, was not well supported. The lowest levels of perception of label claims were about the same as those found in the Cornell study. [1] About one quarter of the consumers sampled were aware of vitamin D fortification in various products. From there the level of awareness improved to a high of 80 percent for both the B-complex vitamins in Special K and vitamin C in apple juice and Tang.

The second hypothesis, that qualitative information is more acceptable to consumers than quantitative, was supported. The main objection to quantitative information was that the consumer is not supplied with a frame of reference to use in interpreting the information. This is a result of Canadian labelling regulations, which confine themselves to objective statements and attempt to avoid evaluative claims.

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[1] Lenahan, et al., "Consumer Reaction to Nutrition Information on Food Product Labels," p. 20.

## Conclusions

There does appear to be a good deal of consumer interest in nutritional information. Not only was the questionnaire well received, but the levels of awareness were higher than anticipated. However, for this to occur, the information must be presented to the consumer in an interesting manner; educational and promotional efforts, in simple terms and on a personal level, appear to be well received. Merely printing the information without drawing attention to it will not suffice.

If a program of meaningful nutritional labelling is to be implemented, it should incorporate a criteria for standards. Consumers are not interested in numbers for numbers' sake. The labelling program which is starting in the U.S. is one attempt to do this; information on the effectiveness of this program will be useful for other schemes under consideration.

Quite possibly, however, the average consumer is not interested in this much detail and would be satisfied with more general descriptions. This would allow her to become aware of several sources of essential nutrients and she could plan the diet around these. They would ensure that the bulk of requirements had been met, and when a diet is composed of foods from many areas there is usually no problem with low levels of requirements.

If the primary motive of nutritional labelling is to be quality improvement in the food industry, then labelling could be an ineffective way to go about it. The consumer image of dry cereals is that they have little nutritive value. In fact, the cerals do contain nutrients and the information is already available on the packages. Thus it does not appear that the labelling is communicating information regarding the nutritive value of cereals to consumers. Nor would the consumer likely be aware if Kellogg's suddenly changed a nutrient level. Since it is unlikely that the label claims are making any of the dry cereal manufacturers reconsider their cereals' nutritional content, the effectiveness of the label claims on nutritive quality is doubtful. Nutritional content can only be an effective basis of competition if the consumer is aware of and concerned about differences, and this is not apt to happen until nutritional information becomes incorporated into advertising rather than (or in addition to) labelling.

## Recommendations

### For Research

This study was a preliminary one. More detailed information on consumer perception of nutritional information on packages would require more extensive sampling. A sample of one thousand would allow regression

analyses and statistical tests to be performed, so the demographic characteristics could be studied. However, at 15 minutes per questionnaire, this would require 250 hours of interviewing time, so there would have to be sufficient time and finances available. A household survey using stratified random sampling could be expected to give a more representative sample of the Edmonton population. The quantitative questions would yield more accurate responses if they were asked in an open-ended format. This form of a study would yield extensive information on consumer perception of label information, including which segments of the population are more or less receptive.

Knowledge that consumers perceive nutritional labelling claims does not mean that they use the information for product differentiation, purchase decisions, or meal planning. One would expect the number of consumers who use the labels to be less than the number who notice them. Yet it is in the use of the labels that the primary nutritional goals (outlined in Chapter 1) can be realized.

Perception is the first step. Once it has been successfully achieved, research must move on to studying the understanding and use of the information. The basic patterns of consumer motivation and behaviour must be considered along with consumer rights when protection policies are being developed.

Further research could take many directions. These include:

1) the present level of nutritional education among consumers,

2) forms in which information can best be assimilated by consumers,

3) food purchasing and meal planning behaviour to determine the importance of nutrition, leading to an estimate of the use which might be made of nutritional labelling,

4) costs to the food industry, and

5) the desire of consumers for this type of information in concrete terms; that is , what costs would they willingly bear?

For Labelling

Perhaps an alternative or addition to detailed labelling might be to have consumer consultants in supermarkets on a rotating basis. One way in which the consultants could be distributed is in terms of geographic area and population, so that each one serves a number of stores. There are several possibilities for sponsorship; the manufacturers and/or the retailers could do it on a

cooperative basis, or they could be civil service positions. While there would be some complex administration involved in developing the program, once established, it would not necessarily be more expensive than the extensive monitoring program required to accompany specific detailed label claims. Ideally, the consultants would have a professional background in nutrition, food processing, marketing, and the legal framework in which these occur. Then they could field questions and complaints in areas other than nutritional labelling. In addition to providing information to consumers, they could also carry feedback quickly to the industry.

A need for promotion and personalization of information is evidenced. Thus firms who are utilizing voluntary labelling should, if they want their efforts to be better recognized by consumers, incorporate the information into their regular marketing campaigns. The government, when planning to implement labelling requirements, should consider the effort required in addition to labelling for the program to be effective. As long as the consumer is without an educational background, she cannot make use of detailed information. Those with specific requirements for specific information are a different problem which can probably best be solved by a method other than trying to approach the masses. Promoting consumer nutrition education may well satisfy the interests of the majority.

Finally it is suggested that all levels of the food industry continue to consider the demand for nutritional information, but that they bear in mind that the consumer is not exclusively interested in nutrition and that costs should be controlled accordingly. Thus, careful thought and research should be given to any program before it is implemented. The integration of research results and policy formation requires compromises between demands of the consumer and the ability of the system to meet them.

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# APPENDIX A

## TABLE A.1

A COMPARISON OF THE DEMOGRAPHIC BREAKDOWN OF PHASE 1 AND PHASE 2 INCLUDING CITY DATA FOR AGE

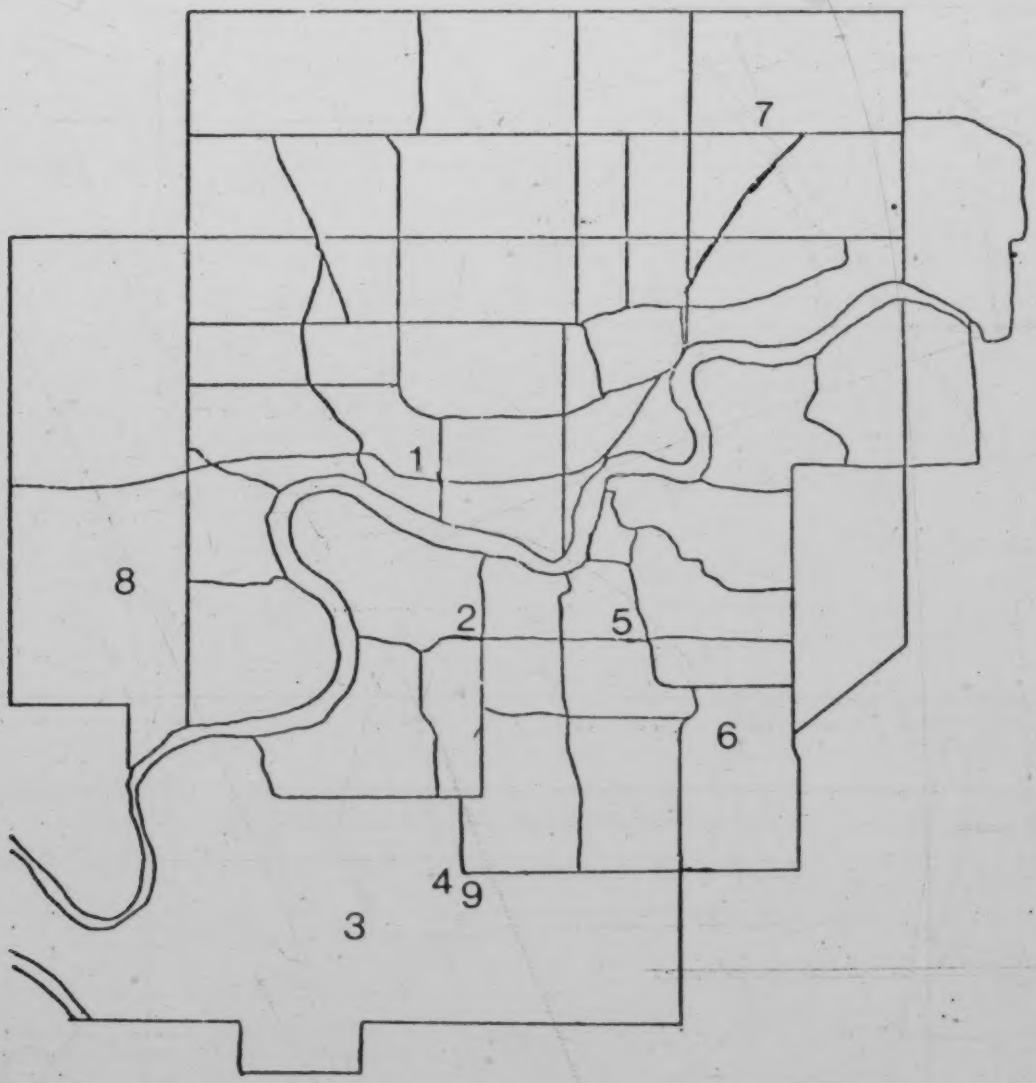
| % of Sample in: | Phase 1 | Phase 2 | City |
|---|---|---|---|
| Grade School | 1.8 | 8.3 | |
| Secondary school | 29.1 | 49.0 | |
| Technical training | 18.2 | 16.6 | |
| University | 40.0 | 27.6 | |
| Post-graduate | 10.9 | 04.8 | |
| Less than $3000 | 09.1 | 01.4 | |
| $3000-6000 | 23.6 | 14.5 | |
| $6000-9000 | 21.8 | 13.8 | |
| $9000-12,000 | 09.1 | 23.4 | |
| More than $12,000 | 30.9 | 41.4 | |
| 18-21 years | 12.7 | 08.3 | 03.2 |
| 21-35 years | 69.1 | 46.9 | 35.6 |
| 35-50 years | 12.5 | 28.3 | 29.9 |
| More than 50 years | 05.5 | 15.9 | 24.4 |

Source of city data: Statistics Canada, 1971 Census of Canada, Cat. No. 92-716 (Ottawa: Statistics Canada, 1973), Vol. 1, Part 2.

APPENDIX B

FIGURE B.1

CITY MAP OF EDMONTON SHOWING LOCATIONS OF THE SURVEY




Source: D.G. Devine, "An Empirical Study of Metropolitan Market Conduct in Food Retailing" (Unpublished M.Sc. thesis, Department of Agricultural Economics, University of Alberta, 1969), p. 26.